Title: ECE5650: Computer Networking and Programming for Engineers
Session: 24574

Credits: 4 (LCT:4)

Updated WSU Catalog Description:
Prereq: ECE 4050 or CSC 5050 or consent of instructor; junior standing or above.
Fundamentals of network services and architectures, TCP/IP protocols, network
programming using sockets, remote command execution, and other topics. Programming
assignments give students hands-on experience.

Coordinator: Cheng-Zhong Xu, Assoc. Professor of Electrical/Computer Engineering

Instructor: Cheng-Zhong Xu, Assoc. Professor of Electrical/Computer Engineering

http://www.ece.eng.wayne.edu/~czxu

Office Hours: 3:30pm-5:30pm Wednesday
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Course Meeting Time: Monday and Wednesday 10:40am – 12:30pm, Winter’07
Course Meeting Location: 0118 STAT

Goals: To develop an understanding of the underlying concepts and technologies that make the
Internet work and the Internet applications architecture from a five-layered model approach
including the definition and services of the application, transport, network, link and physical
layers. To prepare students for practical IT work environments where the internet is the
cornerstone of software developments.

Learning Objectives: At the end of this course, students will be able to:
1. understand the definition and services of the application, transport, network, link and
   physical layers of the Internet.
2. understand the architecture and implementation of network applications and in particular
   using TCP/UDP socket programming.
3. develop a detail understanding of how end-to-end applications communicate over the
   internet.
4. know services and limitations of different network protocols and hardware components that
   make up the internet.

Textbook: J. Kurose and K. Ross, Computer Networking: A Top-Down Approach Featuring the

Reference Texts:
   L. Peterson and B. Davie, Computer Networks: A Systems Approach, Morgan
   Kaufmann, 3rd Ed, 2003
   W. Steven, TCP/IP Illustrated, Vol. 1: The Protocols

Prerequisites by Topic: ECE 4050 or CSC 5050 or consent of instructor.
Corequisites by Topic: none
Topics:

2. [1 weeks] Java Programming Basics, Socket Programming in Java
7. [2 week] Wireless & Mobility: Introduction to Wireless and Mobility, Wi-fi, Mobility Principles, Cellular Telephony and Mobile IP.
8. [1 week] Network Security

Computer Resources: need to have access to a computer for programming assignments

Course Resources: none.

Course Policy:
- It is your responsibility to visit the course website at http://www.ece.eng.wayne.edu/~czxu/ece5650 to keep you up to date;
- Late submission of homework, programming assignments, and project reports is not accepted.
- Any questions regarding your scores of assignments and tests should be resolved within 3 days after the scores are released.
- Adherence to the University's Code of Ethics will be strictly monitored and enforced. This will be applicable to assignments, projects and examinations.

Cheating Policy and Penalty for Cheating: Cheating is defined by the University as “intentionally using or attempting to use, or intentionally providing or attempting to provide, unauthorized materials, information, or assistance in any academic exercise.” This includes any group efforts on assignments or exams unless specifically approved by the professor for that assignment/exam. Evidence of fabrication or plagiarism, as defined by the University in its brochure Academic Integrity, will also result in downgrading for the course. Students who cheat on any assignment or during any examination will be assigned a failing grade for the course. Any work submitted for a grade must include the following statement and be signed and dated. If this is missing or not signed and dated, the work will be returned ungraded.

I have neither given nor received unauthorized assistance on this work.

Signed: Date:

Equipment Handling Policy: none.
Distribution of Points:
- 5%  Class Attendance
- 15% 5 Written Assignments
- 15% Programming Assignments
- 30% 2 Midterm Tests with 15% each
- 35% Final Exam

Grading Scale: A:95-100;A-:90-94;B+:85-89;B:80-84;B-:75-79;C+:70-74;C:65-69;C-:60-64;E/F:0-59.

Attendance: You are expected to attend every lecture in its entirety. Do not schedule other classes or commitment that conflict with any part of the lecture time. A low attendance will negatively affect the grading scale when the total grade is at a border line.

Schedule: See course structure in the course homepage for details. The last day to drop any class with a tuition refund is the end of the second week of classes. Any withdraw afterwards will be assigned "withdrawal passing (WP)" or "withdrawal failing (WP)" on the transcript.

Make-up Exams: There is no make-up exam policy.

Outcome Coverage:
(a) an ability to apply math, science and engineering knowledge. The homework and exams require students to solve problems in an area such as communication delays and error checking.

(b) an ability to design and conduct experiments, as well as to analyze and interpret data. The homework and project assignment require student to design and implement network components such as web servers, mail clients and proxy servers.

(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability. The design in the project must be checked against real world operating limits.

(e) an ability to identify, formulate and solve engineering problems. Students must be able to identify and model the architecture of network applications and their performance under practical limits.

(f) an understanding of professional and ethical responsibility. Students will learn how to use network monitoring tools and how not to misuse or abuse such knowledge.

(g) an ability to communicate effectively. Students are required to write a comprehensive report on the project.

(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context. The course details the design of the public internet and how engineering solutions evolved to meet global, economic, environmental, and societal needs.
(j) a knowledge of contemporary issues. The students will learn about the design and issues with the internet that is used by millions of people and what issues are being addressed.

(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice. Students taking the course will learn how to use software tools such as Ethereal to monitor networks and programming languages such as Java to build network applications.

Policy on deferred grades:
A grade of “I” can only be assigned if all of the following criteria are met:

1. you are not currently failing the class and,
2. there is not a substantial quantity of work yet to be completed,
3. there is no extra work required of the instructor beyond the normal duties of grading the paper/exam,
4. there is no need for you to attend the class in subsequent terms.

The final decision to assign an incomplete grade rests with the instructor. An “I” grade must be made up within one year of assignment of the grade.

Examination policy:
The final examination schedule was listed above. If you have any conflicts with the examination date, please notify the instructor as soon as possible. The following documentation is required for rescheduling of an examination:

[Medical Excuse:] A signed letter from a physician from the day of the examination indicating that the student had a valid medical reason for missing school. This letter must be on the physician’s letterhead and the name and phone number of the physician must be legible. (Note: For cases of extended medical treatment, the letter can be dated prior to the examination, if the physician’s recommendation for leave extends beyond the examination date.)

[Employment Conflict:] A signed letter from the student’s direct supervisor indicating that an absence from the Detroit-area is required for the student’s employment for the dates surrounding the examination.

[Death in the Family or Family Illness:] A copy of the death certificate or obituary for the family member who has died. For illness of a family member for whom a student is the primary caregiver, a signed letter from the family member’s physician for the day of the examination.

[Transportation Problem:] In the event that you are prevented from arriving on campus due to a transportation delay, the following should be provided:
1. A copy of the police report concerning a traffic accident
2. A copy of the receipt for towing from a towing service
3. A signed letter from the Customs and Immigration Officials at the Detroit/Windsor border indicating that a student was delayed for questioning

The final determination of the validity of an excuse is the jurisdiction of the faculty member. In all of the above instances, all reasonable attempts must be made to contact the faculty member to notify them of the problem BEFORE the examination. This can be done via email or via phone. If notice is not provided before the examination, no documentation will be accepted.